

CLAIMS

1. A vein authentication device comprising:

an interface on which a part of a living body whose image is to be picked up is placed;

5 one or more light sources for emitting infrared light;

an image pickup unit for picking up a blood vessel image of the part of the living body using infrared light emitted from the light sources;

an image computing unit for processing the blood vessel image picked up by the image pickup unit; and

10 a light shielding unit for shielding infrared light emitted from the light sources and preventing the infrared light from traveling in an image pickup direction of the image pickup unit,

wherein the interface has an opening opened in the image pickup direction of the image pickup unit, and

15 wherein the light sources irradiates the part of the living body with infrared light from an image pickup side of the part of the living body.

2. The vein authentication device according to Claim 1, wherein the part of the living body is a finger.

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3. The vein authentication device according to Claim 2, wherein the plural light sources line up in a direction substantially perpendicular to a longitudinal direction of a finger put on the interface.

25 4. The vein authentication device according to Claim 2, wherein the

interface is provided with plural pits extending in a longitudinal direction of a finger put on the interface.

5 5. The vein authentication device according to Claim 2, wherein the interface has a shape concaved in the center.

6. The vein authentication device according to Claim 1,
wherein the interface allows the part of the living body to move thereon;
10 wherein the image pickup unit picks up plural vein images of the part of the living body at different sites; and
the image computing unit composites the plural vein images picked up by the image pickup unit.

15 7. The vein authentication device according to Claim 6, further comprising a movement amount measuring unit for measuring a movement amount of the part of the living body, and
wherein the image computing unit composites the plural vein images picked up by the image pickup unit with reference to the movement amount
20 measured by the movement amount measuring unit.

8. The vein authentication device according to Claim 1, further comprising a light amount adjusting unit for adjusting a light amount of the light sources.

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9. The vein authentication device according to Claim 8,
wherein the image pickup unit picks up plural vein images of the part
of the living body at different light amounts adjusted by the light amount
adjusting unit; and

5 the image computing unit composites the plural images picked up by
the image pickup unit.

10. The vein authentication device according to Claim 1, wherein the
interface is formed integrally with the light shielding unit.

10 11. A vein authentication device, comprising:
an interface on which a part of a living body whose image is to be
picked up is placed;

one or more light sources for emitting infrared light;

15 an image pickup unit for picking up a vein image of the part of the
living body using infrared light emitted from the light sources;

an image computing unit for processing the vein image picked up by
the image pickup unit, and in that; and

20 a light shielding unit for shielding infrared light emitted from the light
sources,

wherein the interface has an opening opened in an image pickup
direction of the image pickup unit,

wherein the light sources is placed laterally to the opening,

25 wherein the light sources emits infrared light having an optical axis
in the image pickup direction to irradiate the part of the living body with

infrared light from an image pickup side of the part of the living body, and
wherein the light shielding unit is provided between the opening and
the light sources, and to more than half of an upper portion of the light
sources on the opening side.

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12. A vein authentication device, comprising:

an image pickup unit for picking up a vein image;

an image computing unit for processing the vein image picked up by
the image pickup unit;

10 an interface on which a part of a living body whose image is to be
picked up is placed;

one or more light sources for emitting infrared light; and

a light shielding unit for shielding infrared light emitted from the light
sources,

15 wherein the interface has an opening opened in an image pickup
direction of the image pickup unit,

wherein the light sources is placed laterally to the opening,

wherein the light sources emits infrared light having an optical axis
that is tilted in a direction opposite to the opening to irradiate the part of the
20 living body with infrared light from an image pickup side of the part of the
living body, and

wherein the light shielding unit is provided between the opening and
the light sources, and to an upper portion of the light sources on the opening
side.

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